NOTES.

SUCCESSFUL trials were made with the British military airship at Farnborough on Tuesday. The airship is cylindrical in shape, its length being about 100 feet and diameter 30 feet. Four bands which encircle the cylinder support a light framework under which the car of the balloon is suspended. The motor driving the propellers is fixed in the forepart of the car, and in the stern of the framework there is a large six-sided rudder, which is controlled by rudder lines from the car. Above the car are six aëroplanes, three over the bow and three over the stern. The trials on Tuesday demonstrated that the airship could be controlled and steered in a very satisfactory manner; and the success attained shows that real advance has been made in aëronautics during the past few years.

OFFICIAL announcement is made that on and after September 26, the colony of New Zealand and the territory belonging thereto will be called and known by the title of the Dominion of New Zealand.

Science states that Prof. J. J. Stevenson, of New York University, and Prof. W. M. Davis, of Harvard University, are among the Americans who will attend the celebration of the centenary of the foundation of the Geological Society of London at the end of this month.

IT is stated in the *Engineer* of September 6 that the deepest bore-hole put down for coal in Great Britain has just been completed at Cameronbridge, Fifeshire. The bore-hole attained a depth of 4534 feet before the mountain limestone was reached. At the instigation of the Scottish Geographical Society, steps are to be taken to ascertain the earth temperature at the bottom of the bore.

A REUTER message to Winnipeg from Athabasca Landing reports the loss near Fort Anxious of the *Duchess of Bedford*, the vessel of the Anglo-American Polar Expedition under Captain Ejnar Mikkelsen. The expedition sailed from Victoria on May 20, 1906, with the object of exploring the unknown regions lying to the west of the Parry Archipelago, and of discovering whether there was land to the north of the Beaufort Sea. Though the vessel is lost, a message received on September 7 from Mr. V. Stefansson, the ethnologist of the expedition, reports "Expedition all safe." The telegram was sent to the U.S. National Geographic Society from Eagle City, Alaska, on the Upper Yukon River.

A COMMITTEE to inquire into and report upon certain matters relating to the improvement of forestry in Ireland has been appointed by the Vice-President of the Department of Agriculture and Technical Instruction. The committee consists of the following members:—Mr. T. P. Gill (chairman), Lord Castletown, Mr. W. Redmond, M.P., Rev. D. Kelly, Lord Bishop of Ross; Mr. H. de Fellenburg Montgomery, Mr. W. F. Bailey, Mr. W. R. Fisher, and Prof. J. R. Campbell. The terms of reference are to inquire into and report upon the following matters relating to the improvement of forestry in Ireland, viz.:—(1) the present provision for State aid to forestry in Ireland; (2) the means whereby in connection with the operation of the Land Purchase Acts existing woods may be preserved, and land suitable for forestry acquired for public purposes; and (3) the financial and other provisions necessary for a comprehensive scheme of afforestation in Ireland.

THE Rome correspondent of the *Times* states that the palace which is being erected for the International Agricultural Institute in the gardens of the Villa Borghese is rapidly approaching completion, and before the end of September will be roofed in. Invitations for the meeting of the permanent committee and for the inauguration of the institute will probably be issued in the course of November next, and with the first meeting of the committee in the spring of next year the institute will enter upon its career of activity. The Italian Royal Commission has appointed Prof. M. Pantaleoni to superintend an inquiry for the purpose of ascertaining exactly the extent of the information which the different countries that have adhered to the convention are in a position to supply with regard to their agricultural production. Prof. Bodio, of the General Bureau of Statistics, has been entrusted with a mission to Germany and Austria to study on the spot the systems pursued by those countries for the collection of agricultural reports.

THE latest example of the close connection between science and industry in Germany is afforded by the foundation of an institute for milling research in the Seestrasse, Berlin, adjoining the two already well-known institutes for research in the sugar and fermentation industries. The new institute was formally opened on July 30; it consists of a main building containing the administrative offices and laboratories, together with an experimental granary, a wheat and rye mill, and a bakery. The granary has a storage capacity of more than one million kilos., and the dimensions of the elevators, conveyors, and other apparatus and machinery are such that 17,500 kilos. of grain per hour can be dealt with. The mill is electrically driven throughout, and fitted with the most modern machinery; it contains two complete separate plants, each capable of milling two tons of grain every ten hours. The bakery is similarly fitted with the latest improvements of bakehouse machinery, and contains a laboratory. The institute was built out of a grant of nearly 30,000*l.* from the Minister of Agriculture, who also gives a yearly subsidy; it is carried on and maintained jointly by the Prussian Chamber of Agriculture, the German Millers' Union, and the Central Bakery Union of Berlin. The objects of this research institute as set forth in the contract with the Minister of Agriculture are of interest. It is proposed to carry out practical research and scientific investigation on grain during storing, milling, working up and baking; to experiment with the baking of home and imported grain; to conduct research work for the Government, and to carry out official and private analyses of grain, flour, fodder stuffs, &c., thereby supplementing the income. Everything has been done to ensure a proper and complete investigation of the many problems which the milling and baking industries present. It is of interest to contrast this new sign of German thoroughness with the state of things in this country, where it is left to private enterprise to initiate research. Thanks, however, to the work of the Home-grown Wheat Committee of the National Association of British and Irish millers, in co-operation with the Rothamsted Experimental Station and the Agricultural Department of the University at Cambridge, much valuable work on problems connected with wheat and flour has been and is being carried out in this country.

WE have received the report of the meeting of inspectors of apiaries (U.S. Department of Agriculture, Bureau of Entomology, Bulletin No. 70). It contains much information respecting the diseases of bees; in particular, the American and European foul broods are discussed as regards ætiology and prevention.

FROM the Economic Proceedings of the Royal Dublin Society (vol. i., part ii., August) has been reprinted, as in previous years, a very valuable report on some of the injurious insects and other animals observed last year in Ireland, and reported on by Prof. Carpenter. The report consists of only thirty-one pages, and yet is full of new, interesting, and important matter, and such that one can thoroughly rely upon. Amongst the thirty pests reported on, the most interesting is the cabbage stem-borer (*Psylliodes chrysocephala*, Linn.), of which an excellent account of the larva is given, of scientific as well as practical value. Another new pest is dealt with, the long-horned barley-fly (*Elachyptera cornuta*, Fallen) attacking barley in Ireland. A willow beetle (*Phyllodecta vulgatissima*, Linn.), as yet unrecorded as a pest in England, where its place is taken by *P. vitellinae*, is also dealt with, owing to the harm caused by it in Lurgan. Amongst the parasites of domesticated animals, notes are given on the sheep louse (*Trichodectes sphaerocephalus*), known also as the red louse. Prof. Carpenter wisely recommends dipping twice at an interval of ten days to clear the sheep of these pests. We hope he will insist on this necessary treatment also in sheep scab, for just as in red lice so in the sheep Acarus, eggs hatch out some days after dipping, not having been affected by it, and thus the disease is carried on, and dipping "orders" lose much of their value. Amongst other pests mentioned we note the lackey moth in the south of Ireland, small ermine moths in Waterford County, mussel scale attack, the turnip moth (*Agrotis segetum*) feeding on mangolds in Queen's County, the beet carrion beetle in County Wicklow, and the pine bark beetle in County Dublin. There are eleven figures in the text, three being original, and six plates, two excellent ones giving details of the larval *Psylliodes chrysocephala* and damage caused by it. A plate (xli.) showing the life-history of the lackey moth is given, photographed from a museum preparation; this does not seem to us to give a natural representation of the larvæ feeding, &c.

ACTING on the instructions of M. Maspero, Directeur général du Service des Antiquités, Prof. Elliot Smith removed the wrappings from the mummy of Ménephtah—the Pharaoh engulfed in the Red Sea while in hot pursuit of the Egyptians. From the writing on the shroud, the process of embalming, the resemblance to Rameses II. (Ménephtah's father) and to Seti the Great (his grandfather), there is every reason to believe that M. Maspero is right in the identification of this as the mummy of Ménephtah. From a very thorough examination of the mummy, Prof. Smith infers that Ménephtah at the time of his death was "a somewhat corpulent old man of rather more than medium height (1·714 m.), almost completely bald, with only a narrow fringe of white hairs," with calcareous patches in the walls of his arteries, calcified costal cartilages, and with few remaining teeth. The mummy had suffered much at the hands of plunderers, while there is also evidence that the embalmers had taken liberties with the Pharaoh of the Exodus. Prof. Smith's report appears in the *Annales des Antiquités de l'Egypte*, 1907.

THE first Bulletin for the current year of the Société d'Anthropologie de Paris contains the annual address of the president, M. Zaborowsky, which is mainly devoted to a review of the work in recent years, and to an appeal for the recognition of anthropology as an exact science by "the official hierarchy" of the Académie des Sciences. The most important contribution is that of M. E. T. Hamy, on representations of the human figure in the monuments of ancient Egypt, supplementary to other studies by the author on the same subject. He discusses the influence of the system of hierographs on the attitudes of the figures, which usually face the right, and he reviews the characteristics of the persons depicted by comparison with existing races. Incidentally, he criticises the classification adopted by Prof. Flinders Petrie in his communication on the same subject published in vol. xxxi. of the Journal of the Royal Anthropological Institute. The committee appointed to allot the Broca prizes has conferred the first on M. A. M. Lapique, for his researches on Negro races, and awarded medals and honourable mention to M. A. M. Choquet, for his contribution on teeth with reference to sex and race, and to M. A. M. Fischer, for his investigation of the variations of the radius and ulna.

THE Linnean bicentenary was celebrated in Washington, U.S.A., by a joint meeting of scientific societies, at which Mr. E. S. Greene delivered a Linnean memorial address. In the address published in the Proceedings of the Washington Academy of Sciences, vol. ix., the author presents a description of Linnæus's chequered career and his associations with contemporaneous European botanists and physicians.

As a method of stocking forest land in dry districts of the Deccan, Mr. L. S. Osmaston recommends a combined system of agriculture and tree planting, which he describes in the June number of the *Indian Forester*. The land is let out to cultivators for two years; after the preliminary clearing, the lessee is allowed to plant the whole area with his crops during the first year, but in the following year is required to sow a proportion of seed for trees. In the case of the experiments quoted, the trees planted were *Melia azadirachta*, *Hardwickia binata*, *Albizzia Lebbek*, and *Tamarindus indica*; the crops cultivated were sesamum, cotton, and Indian hemp. An interesting experiment of planting live teak stakes is recorded by Mr. T. R. Singh. Shoots from the buds developed favourably for two or three months, but subsequently died, as the stakes became rotten before roots were developed.

DR. J. C. WILLIS takes the opportunity afforded by the completion of ten years' service as director of the Royal Botanic Gardens in Ceylon to review the work of that period in his annual report for 1906. In 1897 he discovered the "wound response" of Para rubber trees, that the first tapping leads to an increased yield of latex, and Mr. J. Parkin introduced the system of preparing rubber in biscuit form. Impetus was given to camphor cultivation by Mr. K. Bamber's work on the distillation of camphor. Green manuring and treatment of cacao canker have been profitable subjects of investigation at the experiment station. Cotton cultivation has been tried with some measure of success in the north of the island since 1903. The advances made in these subjects and in the exploitation of numerous minor products, the preparation of practical leaflets, and a considerable amount of scientific research furnish a remarkable record of material progress.

THE methods and objects of keeping land in good tilth are explained in *Irish Gardening* (August), to which Mr. A. D. Hall contributes a practical article, and Prof. J. Wilson also writes on the same subject. The editorial article refers to the passing of the Destructive Insects and Pests Act, and the speedy issue of an order applying

to the counties of Gloucestershire and Worcestershire compelling growers to take measures against the gooseberry mildew disease.

IN the *Agricultural News* (July 27) particulars are given regarding the efforts that are being made to establish an industry in Sea Island cotton in Tobago; with this object in view seed has been distributed, and a ginnery is in course of erection at Scarborough. In connection with the disinfection of cotton seed with corrosive sublimate in wooden vessels, experiments have shown that the mercury salt is absorbed, so that it is recommended to give the vessels a preliminary soaking before disinfecting the seed with a fresh solution. A note on the exhibition of limes from Dominica records the award of a gold medal at a recent show of the Royal Horticultural Society.

THE Engineering Standards Committee has issued the British standard specification for steel castings for marine purposes (No. 36, price 2s. 6d. net). The present specifications of the Admiralty, the Board of Trade, and the three leading registry societies were carefully compared, and from these the specification has been prepared.

A SPECIAL number of the *Far Eastern Review* (vol. iv., No. 1) has been published devoted to the mining industries of the Philippine Islands. The important part played by the mineral industry in the American development of the Philippines is clearly shown. In at least one district gold has been taken out in payable quantities, and the development of the coal deposits is making satisfactory progress.

A LENGTHY paper on the origin of the gold in the Witwatersrand banket, by Prof. J. W. Gregory, is published in the Bulletin of the Institution of Mining and Metallurgy (No. 35). He considers that the theory in best agreement with the facts appears to be that which regards the banket as a marine placer in which gold and black sand (magnetite with some titaniferous iron) were laid down in a series of shore deposits. The gold was in minute particles, and it was concentrated by the wash to and fro of the tide, sweeping away the light sand and silt, while the gold collected in the sheltered places between the larger pebbles. The black sand deposited with the gold has been converted into pyrites, and at the same time the gold was dissolved and re-deposited *in situ*. The absence of conclusive evidence of any considerable impoverishment in depth is an argument in favour of the alluvial origin of the gold, and is favourable to the further extension of the banket in depth.

THE facilities provided by liquid air are leading to a rapid extension of our knowledge of the properties of substances at low temperatures. Mr. H. G. Dorsey, of Cornell University, is at present engaged in investigating the coefficients of expansion of solids, and gives in the August number of the *Physical Review* an account of the results obtained for quartz glass, ordinary glass, and several pure metals and alloys. For quartz glass the coefficient is negative below and positive above 190° absolute, remaining very small throughout, while for all the other substances tested it is positive, and increases with rise of temperature. In the case of gold, the curve connecting temperature and coefficient is undulating. The method used by Mr. Dorsey is a modification of Fizeau's, the interference taking place between rays reflected at the top surface of a sheet of black glass, on which a hollow cylinder of the material to be tested stands, and those reflected from the under surface of a sheet of clear glass supported on the cylinder. Temperature corrections are obviated by placing the apparatus in an exhausted chamber.

THE merits of aluminium conductors are likely to be freely discussed, owing to the fact that insulated aluminium cables have recently been placed on the market by one of the well-known cable companies. Bare aluminium conductors have been used already in this country and largely used in America, but insulated aluminium cables have up to the present been practically unknown. The difficulty of making sound joints has been the trouble which has prevented a larger use of aluminium for commercial purposes, but this difficulty, it is stated, has been overcome, and both mechanical and "sweated" joints can be made as desired, and the makers claim that the electrical and mechanical properties of the joints are superior to those of the wire itself. Owing to the conductivity of aluminium being only 60 per cent. that of copper, the diameter of the cable carrying the same current is, of course, greater. How this will affect the cost when insulated aluminium conductors are employed still remains to be seen, as no figures are given as yet as to the price as compared with insulated copper cables. A 50 per cent. saving in weight is claimed over copper conductors of the same capacity, with an increase in diameter of 28 per cent. The insulation used is vulcanised bitumen, as being lighter than paper, for the same degree of insulation. Doubtless practical experiments in the use of these cables will now be made, since the jointing difficulties have been overcome, and the commercial utility of insulated aluminium cables will be tested.

THE *Electrician* for August 30 contains a note on a new system of wireless telephony described by the inventor, Prof. Majorana, at a recent meeting of the Associazione Elettrotecnia Italiana, which is based on the use of a spark gap. For generating the spark a special rotating arrangement is used, and it is claimed that 10,000 single sparks per second can be obtained. These conditions entailed a special microphone, and the Majorana hydraulic microphone, which depends on the capillary action of fluid jets, answers this purpose. With this microphone Prof. Majorana has obtained telephonic currents of very great clearness and strength. The microphone consists of the usual mouthpiece and of a membrane fixed to a glass tube which moves freely under the oscillations of the membrane, and through which slightly acidulated water flows. A special opening in the tube allows the liquid to pass out and strike the upper surface of two cylindrical pieces of platinum which are insulated from each other. This is called the "collector." On striking the middle of the "collector" the fluid spreads over the surface, making contact permanently between the two halves. If a battery is connected in circuit with a telephone and the "collector," so long as the membrane is not disturbed by sound waves, a constant current will flow. As soon, however, as the membrane vibrates the aperture oscillates and varies the flow of drops, so that the thickness of the fluid on the collector is always altering. Prof. Majorana conducted his experiments with a spark gap, and got some satisfactory results, but at the same time he found that by using the Poulsen arc in nitrogen certain advantages accrued.

THE report of the Meteorological Committee for the year ended March 31, 1907, recently presented to Parliament, records great activity in all branches of the useful work of the office, and is more than usually interesting from various points of view. Both the daily and weekly

weather reports have been improved; the maps of the former now include *in situ* observations from Iceland and the Azores, and the statistical portion contains observations by wireless telegraphy from commanders of His Majesty's ships. The Icelandic reports are of the greatest value for weather prediction, and the successful inauguration of the service is due in a great measure to the exertions of the Danish Government and the Copenhagen Meteorological Office. The most important change in the weekly report is the inclusion of a table in which the week's warmth, rainfall, &c., for districts are characterised verbally; to obtain this result the weekly values of the various elements for the years 1881–1905 have been re-examined from the point of view of their frequency distribution. The committee notices with satisfaction that the weather forecasts for the year show a considerable increase of accuracy; the percentage of complete and partial success for the whole of the British Isles of the forecasts published in the morning newspapers was ninety-one, or 3 per cent. higher than in any year since they were first issued in 1879. The operations of the marine branch are carried on with great vigour; we have before us the monthly pilot charts of the North Atlantic and of the Indian Oceans for September, 1907, both issued about the middle of August. These charts afford an amazing amount of useful information brought down to the latest time, and although they represent but a small part of the work of that department, their publication monthly at a regular date is of itself a very onerous piece of work. The committee, recognising the importance of observations made in British colonies and dependencies, fully supports a proposal, emanating, we believe, from correspondence between Dr. Shaw and Mr. R. F. Stupart, of Canada, for holding a meeting of colonial meteorologists at Ottawa in 1908, with the view of promoting mutual cooperation in dealing with meteorological questions generally.

THE third volume (pp. x+378), which deals with linguistics, of the Reports of the Cambridge Anthropological Expedition to Torres Straits has now been published by the Cambridge University Press. The volume is by Mr. Sidney H. Ray, and consists of four parts, dealing respectively with the languages of Torres Straits, the languages of Cape York Peninsula, North Queensland, the languages of British New Guinea, and the linguistic position of the languages of Torres Straits, Australia, and British New Guinea. These reports will occupy six volumes, of which the fifth—the first to be completed—dealing with sociology, magic, and religion of the western islands, was noticed in NATURE of June 23, 1904 (vol. lxx., p. 179). The following general linguistic summary gives the results of Mr. Ray's work on the material collected by himself and Dr. A. C. Haddon with the assistance of numerous other workers:—(1) The western language of Torres Straits is Australian. (2) The eastern language of the Straits is morphologically related to the Papuan of New Guinea. (3) There is no genealogical connection between the two languages of the Straits. (4) There is no evidence of an African, Andaman, Papuan, or Malay connection with the Australian languages. There are reasons for regarding the Australian as in a similar morphological stage to the Dravidian, but there is no genealogical relationship proved. (5) The Papuan languages are distinct from the Melanesian. They are in some respects similar to the Australian, but their exact positions are not yet proved. (6) Languages of the Papuan type are found in German New Guinea. There is no direct evidence of their existence in Netherlands New Guinea. (7) There is insufficient evidence to connect the Papuan with the Andaman or Halmaheran languages. (8) In the northern Melanesian Islands a few languages are found which have Papuan characteristics. (9) Differences of grammar and vocabulary which appear in other island languages appear to be remains of an archaic Melanesian speech. There is no grammatical evidence to connect them with the Papuan, but they show the Papuan diversity of vacabulary. (10) The Melanesian languages of New Guinea and those of the islands are closely (genealogically) related in grammar and vocabulary. (11) The Melanesian languages of New Guinea and the islands stand in the same position with regard to the Polynesian. Both the former represent an older and fuller form of speech of which the Polynesian is a later and more simplified descendant.

WITH reference to a note in NATURE of August 29 (p. 449), Prof. B. Brauner asks us to say that the penultimate sentence should read:—"The atomic weight of nitrogen cannot be higher than 14·01 (*not* 14·10) and lower than 14·008 (*not* 14·08), and so the atomic weight of silver must lie between Ag=107·880 and 107·883."

FROM the author, Mr. Angel Gallardo, we have received a copy of a paper from the *Revista de la Universidad de Buenos Aires* devoted to a discussion of the methods of zoological teaching in that University.

WE have received a copy of vol. v., parts xvii. and xviii., of Prof. G. O. Sars's "Account of the Crustacea of Norway," dealing with a section of the copepod family Canthocamptidæ.

THE July number of the *Trinidad Bulletin* contains several notes on cacao, in which varieties, diseases, and pruning are discussed. On the subject of varieties, Mr. J. H. Hart affirms that clear distinctions exist between Venezuelan and Trinidad Criollo, both in the matter of shape and toughness of skin, and refers to the inconstancy of colour inheritance in cacao pods. With regard to the raising of new seedling varieties of sugar canes, the opinion is expressed that it is more advantageous and quite suitable to make a first selection according to the results of cultivation, and subsequently to test the canes so selected for sugar content, thereby saving extensive chemical investigations.

WE have received from Messrs. R. and J. Beck their illustrated catalogue of microscopical apparatus. It should be useful to microscopists, as hints are given on the use of the apparatus figured.

STUDENTS of the mollusca will be interested in the description, by Dr. W. Gadlikewsky, of the biological station at Sevastopol, in *Biologisches Centralblatt* of August 1, of a new species of doris (*Staurodoris bobretzkii*) from Sevastopol Bay.

THE ovaries of Hemiptera (by Mr. A. Köhler), the nervous and excretory systems of various fresh-water planarians (by Mr. M. Micoletzky), and the tracheal muscles of ephemerids (by Mr. E. Dürken), constitute the contents of vol. lxxxvii., part iii., of *Zeitschrift für wissenschaftliche Zoologie*.

IN vol. lxiii., part ii., of *Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westfalens*, Dr. O. le Roi completes his synopsis of the birds of the Rhine province.

AMONG others, the *Bio-Chemical Journal* for August (ii., No. 9) contains a paper by Dr. MacLean on safranin as a test for carbohydrates. It is concluded that this is one of the most suitable reagents for determining the presence of traces of carbohydrates in liquids.